

1-49. (Cancelled)

50. (New) An implantable marker for percutaneously implanting within a bone, comprising:

a housing having an inner cavity and an outer surface, the outer surface providing a bone anchor configured to engage at least partially with surrounding bone when implanted in use to retain the implantable marker in the bone; and

a marker secured within the cavity, wherein the marker is detectable by a tracking system.

51. (New) The implantable marker of claim 50, wherein the marker and cavity are configured such that at least a part of the marker is positioned within the bone in use.

52. (New) The implantable marker of claim 50, wherein the marker is hermetically sealed.

53. (New) The implantable maker of claim 50, wherein the bone anchor is in the form of a retaining formation.

54. (New) The implantable marker of claim 50, wherein the bone anchor is provided by a surface adapted to encourage bone on growth.

55. (New) The implantable marker of claim 50, wherein the marker is enclosed by the housing.

56. (New) The implantable marker of claim 50, wherein the

marker is wirelessly detectable.

57. (New) The implantable marker of claim 56, wherein the marker is wirelessly detectable using electromagnetic radiation within the radio frequency portion of the electromagnetic spectrum.

58. (New) The implantable marker of claim 53, wherein the retaining formation includes at least a first barb.

59. (New) The implantable marker of claim 53, wherein the retaining formation includes a thread.

60. (New) The implantable marker of claim 50, wherein the housing has an insertion end which is tapered.

61. (New) The implantable marker of claim 60, wherein the insertion end is configured to be bone penetrating such that the implantable marker can be pushed into the bone when a force is applied to the implantable marker.

62. (New) The implantable marker of a claim 60, wherein the insertion end includes a self-taping screw thread.

63. (New) The implantable marker of claim 50 , wherein the housing has a connector for releasably engaging with an insertion tool.

64. (New) The implantable marker of claim 62, wherein the connector is configured to prevent relative rotation between the implantable marker and an insertion tool, when connected

to the insertion tool.

65. (New) The implantable marker of claim 59, wherein at least a first portion of the thread has a cross section shaped to enhance retention of the implantable marker in the bone.

66. (New) The implantable marker of claim 65, wherein at least a second portion of the thread has a cross section shaped to enhance cutting into the bone.

67. (New) The implantable marker of claim 66, wherein the cross section of the second portion of the thread has a sharper profile than the cross section of the portion of the thread.

68. (New) The implantable marker of claim 65, wherein the first portion of the thread has a cross section in the shape of a rounded trapezium.

69. (New) A kit for percutaneously implanting an implantable marker in a bone, comprising:

a guide instrument having a guide channel extending at least partially along a longitudinal axis thereof and for receiving an implantable marker therein;

an insertion tool receivable within the channel of the guide and translatable at least partially along the longitudinal axis, the insertion tool having a distal end for releasably engaging an implantable marker; and

an implantable marker receivable within the channel, the implantable marker comprising a housing defining a cavity and a marker detectable by a tracking system in the cavity,

wherein the insertion tool is operable to drive the implantable marker into the bone.

70. (New) The kit of claim 69, wherein the insertion tool has an elongate body which includes a channel extending at least partially along the longitudinal axis of the elongate body for receiving a thread attached to the implantable marker.

71. (New) The kit of claim 70, wherein the insertion tool has an aperture for receiving the thread therethrough.

72. (New) The kit of claim 69, wherein the implantable marker has a distal end bearing a bone penetrating tip.

73. (New) The kit of claim 69, wherein a distal end of the guide instrument has a bone engaging formation which includes a plurality of bone penetrating teeth and wherein at least a first and a second of the plurality of bone penetrating teeth face in opposite senses.

74. (New) The kit of claim 69, wherein the guide instrument includes a magazine for storing a plurality of implantable markers.

75. (New) The kit of claim 74, wherein the magazine includes a dispensing mechanism configured to automatically insert a further implantable marker into the guide channel after a current implantable marker has been implanted.

76. (New) The kit of claim 69, further comprising a drill receivable within the guide channel and translatable at least

partially along the guide channel, the drill having a drill bit at a distal end for creating a hole in the bone.

77. (New) The kit of claim 69, wherein, when the kit is assembled into an assembly, the assembly includes a skin piercing tip extending from a distal end of the guide instrument, so that the assembly can puncture the skin of a subject.

78. (New) The kit of claim 69, wherein the implantable marker has the skin piercing tip, such that when the kit is assembled into the assembly the implantable marker is located within the guide channel with the skin piercing tip extending from the distal end of the guide instrument.

79. (New) The kit of claim 77, wherein the kit includes a drill locatable within the guide channel and having a drill bit, wherein the drill bit has the skin piercing tip, such that when the kit is assembled into the assembly the drill is located within the guide channel with the skin piercing tip extending from the distal end of the guide instrument.

80. (New) The kit of claim 76, wherein the insertion tool includes the drill and wherein the distal end of the insertion tool is a separable part of the insertion tool into which at least the drill bit can be releasably fastened to provide the insertion tool.

81. (New) A method for percutaneously implanting an implantable marker in a bone, wherein the marker is detectable by a tracking system, the method comprising:

puncturing the skin with an instrument and positioning a distal end of the instrument adjacent the bone;

driving the implantable marker into the bone from the instrument; and

withdrawing the instrument while leaving the marker implanted within the bone.

82. (New) The method of claim 81, wherein driving the implantable marker into the bone further comprises pushing the implantable marker into the bone.

83. (New) The method of claim 81, wherein driving the implantable marker into the bone further comprises screwing the implantable marker into the bone.

84. (New) The method of claim 82, further comprising the step of drilling a hole in the bone before driving the implantable marker into the bone, and wherein the implantable marker is driven into the hole.

85. (New) The method of claim 84, wherein the instrument includes a guide channel extending at least partially along a longitudinal axis of the instrument, and the step of drilling the hole includes translating a drill at least partially along the guide channel of the instrument.

86. (New) An implantable marker for percutaneously implanting within a bone, the implantable marker comprising:

a housing having a body section, a distal end and a proximal end, wherein the body section is cylindrical and defines a cavity therein, the distal end is tapered, the

proximal end has a connector for engaging an insertion tool, and wherein the housing has an outer surface bearing a screw thread; and

a marker enclosed within the cavity, the marker being hermetically sealed and wirelessly detectable by a tracking system using electromagnetic radiation within the radio frequency part of the electromagnetic spectrum, and wherein the implantable marker is retained in the bone in use by the interaction of the screw thread and surrounding bone and wherein the marker and cavity are configured such that the marker is located within the surrounding bone when the implantable marker is implanted in the bone in use.

87. (New) The implantable marker of claim 86, and further comprising a transducer or sensor for detecting a property in the region around the marker.

88. (New) The implantable marker of claim 87, wherein the sensor or transducer is sensitive to a property selected from the group consisting of pressure, temperature, biological activity, and chemical.